OFFSETS, STANDARDIZATION, AND TRADE LIBERALIZATION IN NATO

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PREFACE

The ~~following~~ a paper reports the results of a short-term study for the Bureau of Political-Military Affairs in the Department of State. It draws from and supplements an earlier study done for the Air Force, which deals with "offsets" for NATO procurement of an airborne warning and control system.* While addressing some of the same issues treated in that study, the present paper focuses on one particular aspect of the earlier piece—trade liberalization—as a component of U.S. policy in NATO for dealing with the recurring problem of "offsets." The offset problem arises as a central issue in connection with efforts to rationalize and standardize forces, equipment, and operational capabilities within the alliance. The aim of the present paper is to elaborate on the linkage between trade policy issues, on the one hand, and issues of standardization and "offsets," on the other. We also suggest a method for ~~of~~ applying this linkage empirically so as to identify potential U.S. *civil sector* procurement from the other NATO countries that might "offset" NATO military procurement from the U.S. in the future.

This paper has benefitted from discussions held by the author in March and April 1976 at NATO Headquarters in Brussels with members of the International Staff and the American, British, German, and Belgian Missions, as well as with officials of the British Ministry of Defense in London, and the French Foreign Ministry in Paris. The author particularly appreciates the help of Dr. Lawrence Legere, Defense Advisor to the U.S. Mission to NATO in Brussels, and Mr. Michael MacDonald, Political-Military Attaché at the American Embassy in London, in arranging some of these conversations. Of course, the usual caveats apply to their assistance, as well as that of others with whom these discussions were held. Finally, the author has also drawn on empirical work performed for the earlier Air Force study by his Rand colleagues Gregory A. Carter, Robert P. Castro, David Dreyfuss, and John J. McCall.

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*Charles Wolf, Jr., Gregory A. Carter, Robert P. Castro, David Dreyfuss, and John J. McCall, *"Offsets" for NATO Procurement of the Airborne Warning and Control System: Opportunities and Implications*, R-1875-PR (Santa Monica, California: The Rand Corporation, forthcoming).

SUMMARY

The aim of standardization and rationalization of NATO equipment, forces, and operational practices is to increase the economic efficiency and military effectiveness of the alliance. However, efforts to further these objectives encounter serious resistance within the alliance because of conflicting political and economic concerns in the member countries. These concerns relate, for example, to employment and output in domestic defense industries, excessive "dependence" on U.S. equipment, a desire for broader technological "participation," and balance of payments pressures resulting from possible standardized NATO procurement from U.S. suppliers. The result of these concerns is a recurring demand by NATO members for *quid pro quo* arrangements in which the U.S., for instance, as part of the "price" of selling a standardized item for NATO use, would agree to subcontract part of its production abroad, or to buy other military items from European countries as an "offset," whether or not these transactions were warranted on cost and performance grounds. Such offsets are, in effect, non-tariff distortions to trade. They consequently tend to reduce the efficiency of resource use within the alliance as a whole.

The idea developed in this paper is to avoid or reduce the need for such offsets by undertaking trade liberalization measures which would lower existing barriers to *non*-military exports to the U.S. by NATO members, especially in so-called "high technology" fields. *The aim is to link trade liberalization in the civil and commercial domain to standardized procurement in the military domain.*

Toward this end, we seek in Section II of the paper to identify civil sector commodity categories in which: (a) individual NATO members have a cost advantage over the U.S.; and (b) current exports by these countries are impeded by U.S. non-tariff, as well as tariff, barriers. The method used, first, compares unit costs and cost trends in three-digit industrial commodity categories between individual NATO countries

and the U.S. We then try to measure the degree to which European exports to the U.S. are impeded by U.S. trade barriers. Thus, the method tries to combine European cost and supply estimates with indications of potential U.S. demand.

We conclude that promising prospects for additional European exports to the U.S. lie in electric machinery, non-electric machinery, non-durables, metal products and transport equipment. Notably, the list includes ostensibly "high" technology, as well as "low" technology, categories.

Section III formulates a concrete proposal for linking trade liberalization to standardization and rationalization in NATO. The proposal includes the following elements:

1. A "NATO-round" of trade liberalization to help create an environment in which S&R can proceed more effectively;
2. Encouragement of joint bidding by American and European firms on *defense* R&D and procurement contracting;
3. Removal of Buy America restrictions on U.S. government *non*-military, as well as military, procurement.

The paper considers in Section IV the various arguments that have been raised against a "competitive" approach to standardization and the so-called "two-way street" in weapons procurement, as well as counters to these arguments. Finally, Section IV concludes by suggesting that there may be a fundamental, and unrecognized, conflict between U.S. policies (such as S&R) that seek to promote a more coordinated and integrated *NATO alliance*, and U.S. policies that seek to promote a more coordinated and integrated *European Community*. Policies that further the latter goal may make it more difficult to further the former through measures like standardization and rationalization.

I. INTRODUCTION: BACKGROUND AND ASSUMPTIONS

Efforts to standardize the weapons systems that NATO members procure, and to rationalize their operational practices, encounter resistance within the alliance. Resistance arises from the concern of some that the effect of S&R will be an undesirable preponderance of *American* weapons systems and practices in NATO, that this will entail large foreign exchange (dollar) costs to the Europeans, jeopardize production and employment in their defense industries, and retard their technological development. These concerns result in demands for "offsets" whenever a new American weapon system is under consideration for standardized NATO-wide procurement: that is, demands for purchases by the U.S. from Europe, or co-production of the new American system in Europe, to *offset* part of the dollar costs associated with the planned procurement, as well as to mitigate some of the other concerns mentioned above. Such demands have arisen in connection with NATO procurement of the F-16 and the AWACS, and will surely arise in connection with the pending competition between the XM-1 and Leopard II tank, as well as other systems in the future.

Of course, the various NATO countries differ in the intensity of their concerns, as well as in the relative emphasis placed upon them.* Moreover, although the primary target of offset demands is the U.S., any other country within NATO that wins major contracts for NATO-wide procurement, is likely to become a target as well; for example, the FRG.

In any event, the pressure for offsets, in some form and with varying objectives, is likely to continue to be a major consideration affecting attempted moves toward S&R for the foreseeable future. Consequently, if S&R are to be facilitated, it is important to explore various ways for meeting the concerns underlying the recurring demands for offsets. In this paper we consider one such way--trade liberalization--and the many advantages as well as difficulties associated with it.

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*See *"Offsets" for NATO Procurement of AWACS, op. cit.*, Chapter II for a discussion of the differing motives for seeking offsets among the various NATO countries.

The following discussion is based on certain assumptions which, for the most part, will be taken as a starting point without further examination:*

1. A greater degree of standardization and rationalization of NATO forces, equipment and operational practices is desirable in order to increase both economic efficiency (lower costs) and military effectiveness of the alliance;**

2. However, the objectives of economic efficiency and military effectiveness in the alliance as a whole may conflict with other political and economic considerations within the member countries, e.g., employment and output in national aerospace industries, excessive "dependence" on U.S. equipment and technology, the desire for broader technological "participation," etc.;

3. Moreover, such considerations may be extremely important, even decisive, in shaping the policies and attitudes of some NATO members toward "strictly" military issues. (For example, the real military contribution of AWACS to NATO's air defense and early warning capabilities may be less important in influencing the decision of NATO countries on whether, when, and how much to buy of the system, than the resolution of "offsets");

4. The increasing complexity and rising costs of new weapons systems, combined with severe budgetary constraints in all of the NATO countries, means that a smaller number of new systems can be developed, procured and deployed within the alliance as a whole in the future. Therefore, the interest of key NATO countries in "participation" in development and production of any particular system is likely to be more intense in the future than in the past.

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*For a fuller discussion of these assumptions, see Chapters II and VI, *Ibid.*

**This assumes, of course, that the selection of weapons systems for standardization is itself based on consideration of costs and effectiveness.

The foregoing propositions suggest that the road to S&R is likely to be long and tortuous. They also imply that careful consideration should be given to developing strategies and incentives for S&R; that is, providing an environment conducive to S&R. Moreover, such an environment should be one in which the U.S. isn't offering inducements for others to do something which is in their interest as the U.S. sees it, but rather one in which there is acknowledged to be *mutual benefit* in proceeding to S&R.

The aforementioned study of "offsets" for AWACS procurement formulated and evaluated several alternative strategies for advancing standardization in the specific case of AWACS. Although the AWACS case was specific, the problem is general, as is the method and the strategies developed in the AWACS study for dealing with it. We summarize below certain aspects of the study as background for the present paper.

First, the study developed five illustrative strategies for dealing with offset demands arising in connection with standardization of new NATO procurement:

1. An *internal offset* strategy (OS 1), based on direct participation in production of each new system shared in proportion to the size of each country's participation in procurement of the system;

2. An *external military offset* strategy (OS 2), focusing on "offsetting" NATO purchases of a U.S.-produced system, e.g., AWACS, by U.S. procurement from the NATO countries of *other* military systems for its own inventory;

3. A *non-military offset* strategy (OS 3), designed to offset NATO procurement of U.S. systems by trade liberalization, initiated by the U.S. but extending within the NATO community as a whole. (OS 3 does not approach standardization, and the offset problem it entails, by a series of *quid pro quo* arrangements tying co-production and sub-contracting arrangements (OS 1), or specific military hardware purchases (OS 2), by the

U.S. to each new NATO procurement. Instead, OS 3 proposes to facilitate standardized procurement by a general lowering of barriers to trade and technology flows for civil sector transactions. Aspects of this approach are to be elaborated further in the present paper);

4. A strategy consisting of loans or *financial transfers* (OS 4);

5. A *mixed* strategy (OS 5), combining the more attractive features of each of the preceding strategies.

Second, the study evaluated the five illustrative strategies according to six criteria: employment effects; technology transfer; balance of payments effects; efficient resource use (as reflected by the estimated effect of a particular strategy on the price of the delivered system); alliance political relations; and implementation difficulties. The study concluded from the evaluation that the most promising strategies for meeting the offset problem in the specific case of AWACS probably were OS 2, external military offsets, or OS 5, the mixed strategy. The non-military offset strategy, OS 3, while having strong appeal from the standpoint of several of the evaluation criteria--notably, efficiency and balance of payments--foundered on grounds of implementation difficulties. To implement a major U.S. initiative in the direction of trade liberalization would, it was felt, probably place greater burdens on interagency coordination in the U.S. as well as in other NATO countries, and on relations between the U.S. Congress and Executive Branch, than NATO procurement of a *single* weapons system, i.e., AWACS, would warrant. The implementation difficulties associated with OS 3 in the AWACS case seemed like trying to pull too big a load (trade liberalization) with too small an engine (AWACS). On the other hand, if the idea underlying non-military offsets were not construed simply in terms of achieving offsets for a *single* NATO procurement, but *rather as part of a more general policy to provide an environment congenial to standardized development and procurement for NATO across the board,* then tackling and resolving the implementation difficulties might be worthwhile. The purpose of the present paper is to pursue this idea further, whether

as a "pure" non-military offset strategy (OS 3) or, more likely, as an important part of a mixed offset strategy (OS 5) that would contain some of the other elements mentioned above, as well.

Thus, the general policy intent is broad. The specific aim is to suggest and apply a method for identifying promising "offsets" in the civil sector that may be useful components of traffic on the U.S. bound lane of the so-called "two-way street" associated with standardized NATO procurement from the U.S. This does not imply that all standardization should or will take the form of procurement from the U.S. Rather, the idea is to create an environment in which potential new systems, whether under development in the U.S. or other NATO countries, can be fairly and competitively considered for standardized NATO procurement in cost-effectiveness terms, as best they can be estimated. Trade liberalization measures, which generate non-military offsets, can be a central part of U.S. policy initiatives that seek to create this environment.

In Section II, we describe a method for determining promising "offsets" in the civil sector, and present some preliminary results from application of the method. We also suggest how the results might be extended and improved by working with more disaggregative data. Section III considers how such results might be used to initiate and gain alliance support for trade liberalization among the NATO countries as part of a policy for avoiding "tied" offsets in the future, thereby facilitating S&R. The pros and cons of a "NATO-round" of multilateral trade negotiations are also considered in III. Section IV considers the arguments for and against a more open and competitive interpretation of the "two-way street" associated with *both* military and non-military procurement within NATO. Section IV concludes with a brief discussion of the conflict between policies designed to promote efficient resource use within the NATO alliance (e.g., through standardization and rationalization), and those designed to promote integration of a subset of NATO members in the European Economic Community.

II. COST ANALYSIS AND COMPARATIVE ADVANTAGE

"Offsets" are non-tariff distortions to international trade because they force transactions to take place that normal market incentives would not induce. Offsets therefore tend to create inefficiencies and raise costs associated with standardized weapons procurement. Only to the extent that the "normal" market incentives are themselves *already* distorted* (e.g., due to monopoly or certain other factors), can it be argued that the effects of a further distortion, such as offsets, *might not* create additional inefficiencies.

To avoid, or reduce, the need for offsets we wish to identify areas of production, particularly in so-called "high-technology" industries,** in which production costs of European NATO countries are, or seem likely to become, competitive with those of U.S. producers. In such cases trade liberalization--reduction of non-tariff, as well as tariff, barriers--initiated by the U.S. would be likely to open additional *non-military* markets for the Europeans, stimulate employment, and provide incentives and resources for further technological development, thereby reducing demands for "offsets" associated with standardized *military* procurement. We seek, in other words, *to link trade liberalization in the civil and commercial domain to procurement in the military domain.*

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*The general theoretical discussion of the role of market distortions in *possibly* justifying other distortions is contained in Lipsey and Lancaster, "The General Theory of Second Best," *Economic Journal* (1956).

**This is not the place for discussing the mystique, as well as confusion, surrounding "high technology." For example, supersonic transport may constitute "high technology" to a lesser extent than, say, high-yield seed and chemicals in agriculture, or adapting and using acoustical and infrared sensors in deep sea fishing. Whether "high technology" should refer to products or processes, to novelty or competitiveness, to costs as well as effectiveness, are among the important ambiguities of much discussion of the subject.

The method we use is crude and aggregative, as well as severely constrained by data limitations. It has two parts: the first tries to identify commodity categories in which individual NATO countries seem to have a cost advantage over the U.S.;* the second, tries to measure the degree to which exports by these countries to the U.S. are impeded by U.S. trade barriers. Whereas the first part of the method gives some indication of European cost and supply capabilities, the second indicates areas of potential U.S. import demand.

In the first part of the methodology, we calculate the *relative prices* between individual NATO countries and the U.S. in thirty-four three-digit commodity categories, based on the Standard Industrial Classification (SIC) code, for the period 1967-71, e.g., SIC 230 Metal Ore Mining, SIC 351 Industrial Chemicals, SIC 383 Electrical Machinery, etc.** (The complete list of three-digit industrial product categories is shown in Table 1.) Output data for these categories were aggregated from the six-digit level for comparison with data on total costs at the three-digit level from the same U.N. source. These data were entered into a computer program to calculate domestic unit prices (total costs/total output), with prices in domestic currencies converted to U.S. dollars using International Monetary Fund parity rates.*** We then constructed a series of relative price ratios (price in country x /price in U.S.), in order to obtain a crude estimate of those commodity categories in which particular NATO countries appear to be efficient producers compared with the U.S. The *time* series of relative prices also permits an assessment to be made of *trends*; that is, whether particular countries

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*As calculated, these are areas of *absolute* cost advantage at then-prevailing (1967-1971) exchange rates. They are *a fortiori* areas of comparative advantage.

**The data and SIC categories are from *Growth of World Industry*, United Nations, 1972.

***I am indebted for assistance in these calculations to Robert P. Castro and David Dreyfuss.

Table 1

U.N. DATA PRODUCT CATEGORIES

SIC Code	
210	Coal Mining
220	Petroleum and Gas
230	Metal Ore Mining
290	Other Mining
311/2	Food Products
313	Beverages
314	Tobacco
321	Textiles
322	Wearing Apparel
323	Leather and Products
324	Footwear
331	Wood Products
332	Furniture and Fixtures
341	Paper and Products
342	Printing, Publishing
351	Industrial Chemicals
352	Other Chemical Products
353	Petroleum Refineries
354	Petroleum, Coal Products
355	Rubber Products
356	Plastic Products NEC
361	Pottery, China, etc.
362	Glass and Products
369	Non-Metal Products, NEC
371	Iron and Steel
372	Non-Ferrous Metals
381	Metal Products
382	Machinery NEC
383	Electrical Machinery
384	Transport Equipment
385	Professional Goods
390	Other Industries
410	Electricity, Gas, Steam
420	Water Works and Supply

seem to be getting more or less competitive with the U.S. in particular commodity categories. In some categories, e.g., SIC 210 coal mining, SIC 420 water works and supply, the price relatives are not meaningful because the output (quantity) data on which prices are calculated are too disparate (e.g., with respect to units and quality) to permit aggregation. Only in sixteen of the thirty-four categories can we compute rough, but still moderately useful, price relatives (shown in Appendix Tables 1-16). Although serious reservations (which we discuss in the Appendix) must be attached to the data and to the procedures we have used, and the number and range of product categories covered in the tables is not as wide as we would have liked, nevertheless several interesting observations can be derived from the data:

1. The European NATO countries, or at least several of them, show cost advantages over the U.S. in six of the product categories: transport equipment (SIC 384); non-metal products (SIC 369); other chemical products (SIC 352); petroleum and coal products (SIC 354); footwear (SIC 324); and beverages (SIC 313). These cost advantages generally persist or increase over the five-year time period covered by the data;
2. The U.S. appears generally to be the lowest cost producer in three categories: tobacco (SIC 314);* textiles (SIC 321); and rubber products (SIC 355);
3. The remaining seven industrial categories (wearing apparel SIC 322, wood products SIC 331, paper and paper products SIC 341, industrial chemicals SIC 351, refined petroleum products SIC 353, iron and steel SIC 371, and non-ferrous metals SIC 372), show a mixed picture. In each of them, some of the NATO countries appear to have cost advantages over the U.S., while the U.S. has a cost advantage over other NATO countries. For example,

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*The substantially lower relative costs of the U.K. and the Netherlands in tobacco (see Table A-2) is an exception to this point which may be due to data anomalies, or to special cost advantages relating perhaps to domestic subsidies or import preferences with former colonial areas.

in wearing apparel (SIC 322), Norway has the lowest costs, the U.K., Canada and the Netherlands have about the same costs as the U.S., while France and Germany have higher costs. For iron and steel products (SIC 371), the U.S. is about in the middle, and so on;

4. *There does not appear to be any distinct pattern with respect to the "high-technology-low technology" distinction, in terms of relative price advantages.* European countries have cost/price advantages in some relatively "high" technology fields, e.g., SIC 385 transport equipment, other chemical products SIC 352. Indeed, U.S. cost advantages seem most pronounced in some of the categories that are conventionally considered to be "low technology:" SIC 314 tobacco, SIC 321 textiles, and SIC 355 rubber products.

It is unfortunate that the data don't permit us to pursue these cost comparisons with respect to a larger set of so-called high-technology industries, e.g., electrical machinery, engineering and precision instruments, machine tools, etc., and with respect to more recent data. The marked and differing rates of inflation in the several countries, which have probably altered relative prices since 1971, would make it particularly worthwhile to pursue this analysis with more recent data. Nevertheless, recognizing these limitations, the results we are able to obtain, especially as summarized in (4) above, while they don't establish the case, provide general support for the proposition that the other NATO countries should be able to compete selectively with the U.S. in high technology, as well as other, fields. It is worth remarking, too, that in the case of high-technology weapons systems this general point derives added support from the fact that some American defense producers, as well as parts of the Defense Department and the Congress, express concern from time to time lest European competition might create additional unemployment in American defense industry. These

concerns are themselves indicative of the potential ability of European producers to compete effectively with American firms in high technology defense industry as well. American industry has efficient and less efficient components, and such European firms as Siemens, Dassault, Marconi, Hawker-Siddeley and Rolls Royce would seem able to compete if opportunities for doing so were expanded.

The second part of our method seeks to measure the extent to which industrial exports from the other NATO countries to the U.S. are impeded by U.S. trade barriers.

One way of estimating these trade barriers focuses on U.S. government procurement, and the effect of Buy America restrictions on government imports. As described more fully in the earlier study, this technique compares the proportion of imports in total government procurement with the same proportion in commercial procurement for individual industrial product categories.* The difference between these two proportions indicates the extent to which Buy America, as well as other institutional and procedural restrictions on government procurement, impede normal trade flows. By adjusting the "actual" government procurement in particular product categories up to the "normal" level, based on the comparison with commercial procurement, we can obtain estimates for increases in government procurement that would be *expected* if these restrictions were removed. From these, in turn, we can derive estimates, shown in Table 2, of the amount of the U.S. import increases that can be expected to come from NATO countries.**

As Table 2 suggests, increased imports on government account resulting from removal of procurement restrictions would tend to be more heavily concentrated in fields that are conventionally considered to be high technology (e.g., electrical machinery).

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*See *"Offsets" for NATO Procurement*, Wolf, *et al.*, *ibid.*, Chapter V and Appendix B. This part of the earlier study was principally done by John J. McCall.

**See *ibid.*, Chapter V. The data on which these results are based come from the 1967 Input/Output Table for the U.S., so the commodity categories differ somewhat from those used in the SIC classification shown in Table 1. We have adjusted the figures to allow for price increases since 1967.

Table 2

ESTIMATED INCREASES IN ANNUAL U.S. PURCHASES FROM NATO COUNTRIES IF RESTRICTIONS ON U.S. GOVERNMENT PROCUREMENT WERE REMOVED

(Millions of 1975 dollars)

Product Category	Expected Increase in Gov't. Procurement
Ordnance	54
Non-durables	53
Lumber, wood, store products	3
Metal products	17
Non-electric machinery	24
Electric machinery	109
Transportation equipment	31
Instruments and miscellaneous	22
TOTAL	313*

Another way of looking at trade barriers is to compare tariff schedules and effective rates of protection across commodity categories to see whether there appears to be a pattern suggesting that "high-technology" products

*To the extent that increased government procurement from abroad raises foreign prices or lowers domestic prices, U.S. commercial procurement might tend to increase at home and decline abroad, thereby offsetting part of the total shown. It is hard to estimate the size of this substitution effect, but for various reasons (relating to unutilized capacity and cost functions in U.S. and European industry), the effect would probably be small. Moreover, this effect would probably be more than offset by potential increases in U.S. procurement from Western Europe of *services*, which are not included in Table 2, if government restrictions were relaxed. For example, the competence and experience of the Dutch in hydraulic engineering would make them strong competitors for such government contracts as that connected with the dredging and clearing of the Erie Canal. As I understand it, the U.S. Corps of Engineers recently received a contract for this purpose based more on Buy America preference than on cost-effectiveness considerations, resulting in the sort of adverse political reactions in the Netherlands that might be expected.

elicit *lower* rates of protection than low-technology products.* The implication of such a pattern might be that American producers felt *less* of a threat from European or Japanese competition in high-technology products than low-technology products. Hence, such a pattern would provide some support for European concerns that general trade liberalization, as a means of facilitating standardization and contributing to the U.S.-bound lane of the two-way street, would leave them at a disadvantage with respect to high-technology fields.

The comparison between tariff rates and effective rates of protection, based on the 1973 tariff schedule applied to 1967 value-added data, is shown in Appendix Table A-17. If there were an agreed basis for distinguishing high-technology from other fields, one could perform a statistical test on the data in Table A-17 to test, for example, whether the proportion of *low* rates of protection is significantly *higher* among high-technology than among low-technology fields. In light of my earlier comments** about the difficulty, confusion and ambiguity of the distinction, it doesn't seem worthwhile doing so. However, inspection of Table A-17 does suggest a few points worth mentioning:

1. The highest tariffs and rates of protection do apply to non-durables and to lumber and wood products—categories that are conventionally regarded as "low-technology" fields;***

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*The average tariff rate is based on invoiced *ad valorem* prices of the imported product. The effective rate of protection (ERP) applies the same tariff rate to a smaller base, namely the value-added in processing, derived from the 1967 Input/Output table for the U.S. If, for example, a 10 percent tariff applies to a product 60 percent of whose cost represents non-taxed materials inputs, then the effective rate of protection on value-added in manufacturing would be 25 percent.

**See above footnote, p. 6.

***Although the distinction mentioned earlier between product and process technology should be borne in mind as a qualification to this point. Products that are ancient in product-cycle terms, e.g., in agriculture, may be produced by new and complex processes.

2. However, the support this provides for the view that Europeans are at a competitive disadvantage in higher technology fields is limited. High rates of protection exist for dies and machine tools, surgical instruments, aluminum rollings and castings--fields, which are conventionally considered to be "high technology."

In sum, whether we look at relative cost data with respect to European supply capabilities, or various indicators of potential U.S. demand, the evidence suggests that European producers could compete more effectively in U.S. markets in selected high-technology, as well as low-technology fields, if opportunities to do so were expanded through trade liberalization.

Finally, based on the combined analysis of (a) European relative costs, (b) rates of protection in the U.S., and (c) potential increases in U.S. *government* procurement from removal of Buy America restrictions, *we conclude that promising prospects for additional Western European exports to the U.S. lie in electric machinery, non-electric machinery, non-durables, metal products, and transport equipment.**

*See Appendix Table 1-17, and Wolf, *et al.*, *op. cit.* Selection of the particular product categories listed is based on the following considerations: electric machinery (restrictions on U.S. government procurement, Table 2); non-electric machinery (U.S. rates of protection, Table A-17); non-durables (relative prices, rates of protection, and restrictions on U.S. government procurement, Table 2 and Appendix tables); metal products (rates of protection, Table A-17); and transport equipment (relative prices, restrictions on government procurement, and rates of protection, Table 2 and Appendix tables).

III. TRADE LIBERALIZATION AND STANDARDIZATION

The previous discussion suggests that opportunities exist for additional civil sector exports to the U.S. by European NATO members, and that these opportunities include high technology product categories. Can these opportunities in the *civil* sector be related to standardization and rationalization in the *military* sphere?

If trade liberalization can help realize opportunities for civil sector exports, some of the objections to S&R that underlie European demands for "offsets" would be reduced. Specifically, the resulting increases in European industrial employment, in dollar earnings by the European NATO members, and in wider access by their high technology products to American markets,* can help provide a climate within which S&R alternatives can be more fairly assessed in NATO.

Of course, progress along these lines would take time. Moreover, opportunities for using *generalized* trade liberalization proposals as a means of obtaining European agreement to purchase *specific* weapon systems for standardized NATO use (e.g., AWACS) are likely to be limited. One reason is that the U.S. clearly has *other* larger purposes in view in seeking trade liberalization. It therefore becomes hard to argue persuasively that U.S. trade proposals would be different or less energetic in the absence of NATO procurement of a *single* system than they would otherwise be. In this case, there is a disproportion between the means (i.e., liberalization), and the end (e.g., AWACS), that impairs credibility of the argument.** However, the argument can perhaps be more persuasively advanced where its aim is the larger and broader one of contributing to S&R in general and over the longer run. Indeed, with this as one aim of trade liberalization perhaps *other* U.S. aims

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*A specific suggestion for removing a non-tariff, institutional barrier, and thereby facilitating participation by European technological capabilities in American R&D and procurement contacting, is advanced below, see pp. 17-18, paragraph (2).

**A senior British MOD official capsulized the point by observing that, as far as AWACS is concerned, the trade liberalization idea I had put to him seemed like a case of "the tail wagging the dog!"

e.g., obtaining changes in the EEC common agricultural policy, might be relaxed instead. Moreover, to the extent that trade liberalization in fact contributes to industrial employment, dollar earnings, and European technology development, it would help to make S&R politically, as well as economically, more saleable within the NATO countries, quite apart from the direct *quid pro quos* realized at the negotiating table.

The suggestion advanced here is to connect two quite distinct areas of U.S. foreign policy: trade policy, involving multilateral trade negotiations in Geneva, and *NATO policy as it relates to standardization and rationalization of forces, equipment and operating practices.* Difficulties in the way of forging such a link are numerous. The two areas are politically, professionally, and administratively separate. In virtually all NATO countries including the U.K., France, Germany and the U.S., the areas involve separate jurisdictions divided in various ways (i.e., between Defense ministries, Trade ministries, Foreign ministries and Finance ministries), with separate staffs that usually don't communicate with one another in these matters, and are highly protective of agency prerogatives. Outside the governmental structures, the political and economic constituencies for trade matters, on the one hand, and weapons development and procurement, on the other, tend to be separate. Hence, political bargains, that trade off possible losses in one area against gains in the other, are hard to strike.

Moreover, there may be legal obstacles to linking the two areas. Thus, the Treaty of Rome has been construed by its signatories as *excluding* military development and procurement from the economic undertakings and commitments of community members.

These are formidable obstacles to overcome. However, granted the disconnections between the two areas, it certainly can be argued that the obstacles to linking them are no greater than those between, say, most-favored-nation trade status for the Soviet Union and Jewish emigration from it, or between grain sales and Soviet arms aid to Angola, or between U.S. troop stationing costs in central Europe and West German purchases of U.S. government bonds as "offsets"—to cite some "linkages" that have been forged or advocated in the recent past between disconnected policy domains.

What would be required is an act of political statesmanship at a heads-of-government level, that transcends trade policy and defense policy and their separate administrative jurisdictions. The form of such an action would be a "NATO-round" of trade negotiations with the aim of contributing to an economic and political environment in which standardization and rationalization within NATO could develop more freely and competitively. Whether such an initiative would actually be a catalyst to the multilateral trade negotiations in Geneva, or instead would impede them,* is likely to depend on *how the initiative is formulated and implemented.* With this in mind, we outline below a possible approach toward implementing the proposal.

1. The U.S., at a heads-of-government or NATO Council level, would affirm the principle that a NATO-round of trade negotiations is intended to contribute to an environment in which standardization and rationalization can take place in NATO, and individual weapons systems that are candidates for standardized NATO development and procurement can be fairly evaluated and selected on the basis of cost, performance, and delivery. The aim of these measures is strengthening the military effectiveness and political cohesion of the alliance, as well as using alliance resources more efficiently, in the longer run.

2. Trade liberalization would not be the only element of the new environment. Joint development and production between firms in the U.S. and in other NATO countries, and purchases by the U.S. of military equipment produced in other NATO countries, are intended to be other aspects of the environment. These transactions would also depend on

*Among the principal issues over which MTN have been stalled is the U.S. interest in "trading" concessions on its "grandfather-injury" tariff restrictions (such as may be involved in the specialty steel case) for a lowering of the EEC common agricultural tariff policy. The proposal we are advancing might well be more of a "starter" than this stalemated issue.

considerations of costs and effectiveness, as best they can be evaluated.* As one element of the proposal, the U.S. would undertake to change its existing defense procurement procedures so that contract proposals, which include firms from NATO countries *jointly* with U.S. firms, would be assured of at least equal (i.e., "national") treatment in the proposals' evaluation.**

3. The U.S. would affirm that specific offsets tied to a specific new system procurement constitute quasi-barter transactions with generally perverse consequences for the efficient use of resources in the alliance. It would therefore be the declared aim of this U.S. initiative to reduce or eliminate the need for such offsets in the future.

4. Toward these ends, the U.S. would initiate certain reductions in trade barriers, with reciprocal liberalization by other NATO countries to be realized concurrently or shortly thereafter. These reductions would not be conditional on any specific weapon system procurement by other NATO countries, but would recognize that NATO participation in the development and production of military and non-military systems for U.S. government procurement has been impeded by formal and informal trade barriers.*** Specifically, the U.S. would declare its readiness to remove the rule that government purchases are permitted abroad only when the prices of comparable American goods are more than 50 percent

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*In effect, the proposal follows the outlines of the *"mixed"* offset strategy, OS 5, described earlier, see above p. 4.

**Prevailing institutional practices have, in fact, had the reverse effect. This change would be accompanied or followed by similar assurances of national treatment for U.S. firms participating jointly with European firms in bidding on government contracts in NATO countries.

***Recall the previously cited example of the Dutch hydraulic engineering bid rejected in favor of the U.S. Army Corps of Engineers, see above p. 12 footnote.

higher than those of foreign counterparts.[*] We estimate that this step would generate increased imports into the U.S. from other NATO countries of over $300 million annually.[**] In addition, various other non-tariff and tariff adjustments could be devised that would have the effect of increasing exports by NATO countries to the U.S. by substantially larger amounts.

As a result of this proposal, the flow of traffic on the "two-way street" between the U.S. and other NATO countries would be altered, for both military and non-military transactions. There would be no guarantee that flows in one direction would exactly equal those in another. But the overall consequence would be increased flows along the 105 two-way streets linking the fifteen NATO countries, greater specialization by countries in the production of goods in which they have a comparative advantage and more efficient resource use within the alliance as a whole.

One of the difficulties, additional to those mentioned earlier, in forging a link between these two policy areas is that negotiations relating to S&R concern only the NATO countries, while negotiations relating to trade liberalization are usually on a wider multilateral basis of concern to all countries in the GATT.[***] Although the trade

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[*] When this rule was originally imposed, the U.S. was experiencing large balance of payments deficits. By contrast, the U.S. balance of payments is now (1976) relatively strong as is the U.S. dollar—a particularly appropriate time for removing the Buy America rule. Moreover, under a regime of flexible exchange rates, individual sales and purchases can more appropriately be considered on their merits, with any general balance of payments implications to be properly worked out in the foreign exchange market.

[**] At a 10 percent discount rate, the present-value equivalent of this increase is over $3 billion, hence, considerably above the specific offset "target" that has been considered in connection with the propsed NATO procurement of AWACS. See Wolf, *et al.*, *op. cit.*, Ch. VI.

[***] Of course, bilateral exceptions to the uniform multilateralism of GATT are frequent. For example, granting by the U.S. of MFN status to the Soviet Union would accord equal trade treatment to a *non*-GATT signatory, while trade restrictions imposed by the U.S. on OPEC countries have singled out certain GATT-signatories for retaliatory treatment following the 1973 oil embargo.

liberalization aspect of the proposal made above would presumably be pursued in the broader MTN context, its aim and principal intended impact would be on NATO countries. For example, removal of the Buy America rule would still require that sellers conform to government procurement specifications. Particularly in the high technology product categories referred to earlier, e.g., electric machinery, transportation equipment, ordnance, and instruments,* this would in fact make NATO countries the principal beneficiaries, together with Japan. Furthermore, one aspect of the proposal--encouraging joint bids between U.S. firms and firms in NATO countries on RDT&E and production contracts--would impact directly *only* on NATO members. With some ingenuity and thought, it should be possible to find other specific ways of relaxing tariff and non-tariff barriers that, if pursued multilaterally, would nevertheless in fact benefit the NATO members especially, thereby contributing to an environment in which S&R can proceed as intended.

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*See above, pp. 11-14.

IV. APPROACHES TO THE "TWO-WAY STREET:" CONCLUDING REMARKS

In the earlier study of offsets for AWACS procurement, which we have previously referred to, a contrast was drawn between two approaches to the "two-way street"--the flows of military sales and purchases between the U.S. and European NATO countries. One approach, which was termed "protectionist," was based on a *guaranteed and equal* flow of procurement between the U.S. and other NATO countries; the other, which we termed "competitive," while seeking to obtain agreement within NATO on standardized procurement needs of the alliance, left open to *competitive bidding* among potential suppliers determination of exactly how the balance in transactions would work out.*

It should be evident from the previous discussion that the specific proposal made above for linking trade liberalization and S&R is intended to further the competitive approach to weapons procurement in NATO. In concluding, it is therefore worthwhile to consider briefly the principal arguments that have been made against this approach, as well as answers to them.

One major argument is that European defense industry is too small and fragmented to compete effectively against U.S. firms in development and production of any major weapons system. Besides the so-called "technology gap" separating American firms from potential European competitors, it is argued that the size of U.S. defense procurement, for unilateral U.S. uses apart from collective NATO demands, permits larger production runs for American producers, resulting in lower unit costs and decisive advantages for American firms in any price competition within NATO itself.

*Wolf, *et al.*, *op. cit.*, Ch. VI (15-18). As noted there, the *guarantee* feature is more critical than the exact *equality* of flows in defining what is meant by "protectionism." Guarantees are protectionist because they relax considerations of cost, performance, and delivery in selecting systems, and substitute other national interests and commitments, thereby constituting a *de facto* quota restriction or subsidy in procurement decisions.

There are several points that should be made in response:

1. To the extent the argument is valid, it implies that real savings can be realized by the alliance through the competitive approach, because it enables S&R to proceed by taking advantage of lower unit costs in the U.S. or elsewhere, whatever their source. At a time when defense budgets in all the major NATO countries are tight, and inflationary pressures persist, these savings are especially important.

2. There is surely doubt as to the uniform validity of the argument with respect to *all* major systems--past, present and future. The British Harrier VTOL aircraft, and the Franco-German Rolland II missile system, are important recent counter examples of European systems that have beaten American competition on cost-performance grounds. The closeness of the current competition between the German Leopard II tank and the Chrysler and General Motors models at least suggests that technological gaps and production runs do not always give American firms decisive advantages in direct competition with European systems.* In the study of AWACS offsets mentioned earlier, we developed a "shopping list" of two dozen existing or pending European systems that seemed to be promising candidates to equal or outmatch counterpart American systems on cost-effectiveness grounds.** Although there were major limitations facing compilation of the list because of difficulties in obtaining suitable cost and performance data, the items were culled from a much larger list and covered a wide range of land, naval and air systems. Items on the list constitute another sort of evidence for the point that *European systems can in fact already compete with U.S. systems if given fair opportunities to do so.****

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*In fact, this point will be reinforced if either of the following outcomes results from the forthcoming XM-1 tank trials: (a) the Leopard II wins the competition; or (b) one of the American models wins, but the Germans, as well as others, believe the outcome would have been different but for favoritism of one sort of another to the American firms!

**See R-1875-PR, Wolf, *et al.*, Ch. IV and Appendix A.

***Moreover, subsequent conversations with a number of independent European technical and military sources tend to confirm this judgment. Note, further, that since the argument *against* the competitive approach is usually advanced by European sources, the judgment of *other* Europeans

3. The proposal we have outlined above would, by encouraging joint bidding on U.S. RDT&E contracts by European firms in collaboration with American firms, contribute to technological participation and transfer--hopefully, in both directions. Moreover, the $100 billion of direct investments in the U.S. in the past six years by foreigners, increasingly by Europeans, suggests another means by which firms in NATO countries can reduce the putative technology gap by obtaining both participation and technology from U.S. firms.

4. Finally, in those cases where European NATO members believe that important national priorities and technological spin-off benefits are likely to be realized by winning a competition for standardized NATO procurement in a particular field, government subsidies should be allowed and even encouraged.* Within the framework of the competitive approach we are proposing, NATO procurement decision would be based on costs as reflected in bids, *whether or not some part of these costs were subsidized by governments*.

A second argument against the competitive approach is that "winner-take-all" price competition would place "losing" countries in a position of dependency in resupply that would be politically and militarily unacceptable to them.

The point of this argument bears most strongly on contingencies *outside* Europe in which NATO members might wish to act separately and independently, but would be uncertain about obtaining resupply if the original producers were from a country that opposed the action on foreign policy grounds.

The argument seems, therefore, more realistically to be a concern to the U.S. even more than to other alliance members. The answer to it would seem to lie in a combination of suitable inventory policies (e.g., for spare parts), and standby licensing arrangements including tooling, blue

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as to the favorable competitive prospects of particular European systems is especially relevant.

*See *op. cit.*, R-1875-PR, Ch. VI, where this idea is advanced.

prints and know-how. Together they would provide a hedge against undue influence being attempted by a "winning" supplier over a buyer in the event of a policy divergence between them.

A third argument is that domestic political and economic constraints in the various countries (e.g., industrial unemployment, politically powerful trade unions, industrial lobbies and their legislative supporters, etc.), may make governments unwilling, and perhaps unable, to allow market competition to determine defense production outcomes.

Clearly this argument is particularly strong in certain NATO countries whose economies face serious unemployment problems. Effective counters to the political argument lie partly inside the proposal we have been advancing, and partly outside it: inside, with respect to the removal of the Buy America rule and other U.S. trade liberalization measures in the civil sector, and encouragement of joint bidding on defense contracts; outside, with respect to the prospective improvement of general economic conditions in the member countries. Together these factors should contribute to increasing the political saleability of the competitive approach we have been proposing.

A final observation is more in the way of a comment about, than an argument against, the competitive approach and the proposal advanced here for linking S&R with a NATO-round of trade liberalization.

There is now, and has been for more than two decades, a subtle inconsistency in American policy toward Europe. On the one hand, the U.S. has tried to promote development of a European community as an integrated and effective political-economic entity. On the other hand, American policy has tried to promote the NATO alliance as a more integrated and effective military entity. Standardization and rationalization of equipment, forces and operational practices would contribute to a more integrated military entity. S&R would also be easier to bring about if the alliance itself were already more integrated than it is. Many of the objections and resistances to S&R, in fact, result from the separate

and divided national, as well as European regional, interests within NATO.* As one French official expressed it to me: "We are not concerned with optimizing for NATO, but with optimizing for ourselves!"

The inconsistency in American policy arises from the fact that efforts to promote the economic and political integration of Europe require preferential treatment (e.g., through tariffs and non-tariff preferences, government contracting, licensing arrangements, capital and labor mobility, etc.), to community "insiders," hence discriminatory treatment *against* "outsiders," including the U.S. and Canada, which are not EEC members. Efforts to promote a more integrated alliance require, on the other hand, coordinated, collaborative and reciprocal arrangements within the larger body.

If defense industries in NATO countries were entirely separate from the rest of the economies, it might be possible to link the defense sectors of NATO members along membership lines different from those applying to the rest of their economies. In fact, the separation is artificial. In such fields as aerospace, computers, electronics, propulsion, and nuclear reactors, for example, links between defense and civil technology and production are pervasive. *Preferential treatment to EEC members for development and production in these fields conflicts with efficient use of resources among NATO members as a whole.*** For the latter (which is what S&R seeks to achieve), *trade liberalization in the civil sector, as well as a competitive approach to weapons development and procurement in the military sector, is needed in the larger NATO community, rather than the smaller European community.* Efforts to bring about the larger scale integration as a matter of U.S. policy thus conflict with promotion of integration on the smaller, EEC scale.

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*For example, European concern about preponderance in NATO of *American* equipment and practices, desires to protect and preserve a wider range of *national* defense industries than that which is competitive within the alliance, etc. See above pp. 1-2.

**The point is an example of the "general theory of the second-best." Where tariff or other restrictions already exist, removing some of them (e.g., within the EEC) will create trade (and improve resource use) within the preferred area, but will divert trade (reduce efficient use of resources) in the excluded area (e.g., non-EEC NATO members). See Richard G. Lipsey and Kelvin Lancaster, "The General Theory of the Second-Best," *Review of Economic Studies*, Vol. 24, No. 1, pp. 11-32, 1956-57, and Jacob Viner, *International Trade and Economic Development* (New Jersey: Oxford University Press), 1953.

How to reconcile these two sets of policies, or indeed whether they can be reconciled at all short of simply sacrificing one in order to further the other, is a question of major importance for the development of American foreign and defense policies toward NATO and Europe.

Appendix A:

RELATIVE PRICES FOR SELECTED PRODUCT CATEGORIES IN U.S. AND NATO COUNTRIES

The tables in Appendix A summarize calculations of relative prices for sixteen product categories in those NATO countries for which data were available. The procedure used in calculating the relative prices is summarized in the text (see above, pp. 7-13). It is worthwhile amplifying and emphasizing the shortcomings of the data and procedures, and hence the reservations that must be attached to these results:

1. To obtain dollar prices, conversions from local currencies were made at the IMF parity rates prevailing during the 1967-71 period. Major changes have occurred in exchange rates since that time (e.g., as a result of the limited float, the European currency "snake," differing rates of inflation among the various countries, and so on), and these changes have probably altered the relative price ratios shown in the tables since 1971. In general, aggregating over most of these changes, the current (1976) ratio between German and U.S. prices is likely to be lower, and that between British and U.S. prices higher, for the product categories shown in the tables.

2. The U.N. data at the three-digit SIC level are highly aggregated and heterogeneous. For example, SIC category 351, industrial chemicals, contains 53 different chemicals in varying quantities for each country. Since the quantity data are derived from the six-digit code as explained in the text, the *composition* of the items for which unit prices are calculated is different for each country.

3. Another aspect of the heterogenity problem relates to *quality* differences within the three-digit product categories which also affect unit price comparisons. For example, in SIC 384, transport equipment, the number of automobiles reported in the U.N. data as we have aggregated them is independent of type and quality. Hence, Volkswagens are counted as equivalent to Mercedes Benz cars. If an individual country's exports in a particular product category (e.g., Britain's exports of cars) comprise a relatively large proportion of higher quality vehicles, the price ratios shown in the tables will tend to overstate that country's price relative to the U.S. price.

For reasons summarized in (2) and (3) above, we have omitted eighteen of the thirty-four three-digit SIC codes as being too heterogeneous to be at all useful for comparing prices and price trends. The usefulness of the remaining sixteen product categories is still limited by the considerations mentioned above, although not as limited as in the omitted categories. For example, one can dispel some of the views of prevasively decreasing competitiveness of European industrial output, by recourse to the data shown in the tables.

As noted in the text, it would be possible to avoid or reduce all of the data shortcomings mentioned above by further work with more disaggregation, as well as more recent data.

Table A-1

SIC CODE NO.: 313 PRODUCT GROUP: Beverages

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.000	1.000	1.000	1.000	1.000
FRG	0.570	0.475	0.447	0.460	0.525
France	0.0--	0.0--	0.0--	0.0--	0.0--
UK	0.0--	0.683	0.0--	0.554	0.0--
Canada	0.791	0.735	0.720	0.716	0.747
Netherlands	0.512	0.474	0.582	0.511	0.0--
Norway	0.432	0.437	0.416	0.407	0.415

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-2

SIC CODE NO.: 314 **PRODUCT GROUP:** Tobacco

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.000	1.000	1.000	1.000	1.000
FRG	1.863	1.734	1.657	1.698	1.734
France	0.0	0.0	0.0	0.0	0.0
UK	0.0	0.097	0.0	0.108	0.0
Canada	1.248	1.191	1.267	1.192	1.216
Netherlands	0.0	0.211	0.165	0.168	0.0
Norway	0.0	0.0	0.0	0.0	0.0

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-3

SIC CODE NO.: 321 . PRODUCT GROUP: Textiles

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.000	1.000	1.000	1.000	1.000
FRG	2.707	2.644	2.775	2.670	2.493
France	2.928	2.646	2.673	2.158	1.912
UK	0.0	2.661	0.0	2.204	0.0
Canada	11.962	11.592	12.150	11.015	10.265
Netherlands	6.879	6.647	15.077	12.643	0.0
Norway	0.0	0.0	0.0	0.0	0.0

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-4

SIC CODE NO.: 322 . PRODUCT GROUP: Wearing Apparel

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.00	1.00	1.00	1.00	1.00
FRG	1.13	1.05	1.03	1.18	1.14
France	2.14	1.53	1.31	1.48	1.46
UK	0.0	1.06	0.0	0.96	0.0
Canada	0.97	1.02	0.88	0.84	0.86
Netherlands	1.21	1.23	0.94	0.93	0.0
Norway	0.62	0.51	0.49	0.55	0.53

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-5

SIC CODE NO.: 324 **PRODUCT GROUP: Footwear**

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.000	1.000	1.000	1.000	1.000
FRG	0.918	0.825	0.790	0.924	0.998
France	0.0	0.0	0.0	0.0	0.0
UK	0.0	0.520	0.0	0.604	0.0
Canada	0.724	0.735	0.803	0.860	0.862
Netherlands	0.714	0.705	0.0	0.0	0.0
Norway	0.563	0.557	0.496	0.625	0.717

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-6

SIC CODE NO.: 331 **PRODUCT GROUP: Wood Products**

UK DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.000	1.000	1.000	1.000	1.000
FRG	0.0	0.0	0.0	0.0	0.0
France	0.0	0.0	0.0	0.0	0.0
UK	0.0	11.405	0.0	17.149	0.0
Canada	0.597	0.555	0.553	0.536	0.522
Netherlands	9.212	9.192	7.804	11.268	0.0
Norway	1.279	1.073	1.249	1.406	1.371

$^{a}\dfrac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-7

SIC CODE NO.: 341 **PRODUCT GROUP: Paper and Products**

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.000	1.000	1.000	1.000	1.000
FRG	0.967	0.941	0.960	1.023	1.159
France	1.321	1.485	1.436	1.396	1.471
UK	0.0	3.821	0.0	4.193	0.0
Canada	0.420	0.409	0.391	0.429	0.480
Netherlands	1.667	1.677	1.735	2.068	0.0
Norway	0.519	0.507	0.500	0.541	0.537

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, **1972 edition, United Nations.**

Table A-8

SIC CODE NO.: 351 . PRODUCT GROUP: Industrial Chemicals

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.000	1.000	1.000	1.000	1.000
FRG	1.485	1.520	1.663	1.907	2.025
France	1.623	1.545	1.655	1.672	1.761
UK	0.0	2.939	0.0	2.794	0.0
Canada	0.433	0.403	0.411	0.400	0.402
Netherlands	3.867	3.994	4.045	4.219	0.0
Norway	0.513	0.499	0.491	0.509	0.537

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-9

SIC CODE NO.: 352 PRODUCT GROUP: Other Chemical Products

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.00	1.00	1.00	1.00	1.00
FRG	0.0	0.0	0.0	0.0	0.0
France	0.0	0.0	0.0	0.0	0.0
UK	0.0	0.18	0.0	0.23	0.0
Canada	0.58	0.57	0.62	0.73	0.78
Netherlands	0.0	0.0	0.0	0.0	0.0
Norway	0.14	0.14	0.15	0.17	0.20

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-10

SIC CODE NO.: 353 PRODUCT GROUP: Petroleum Products Refineries

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.000	1.000	1.000	1.000	1.000
FRG	1.067	1.166	1.169	1.301	1.258
France	5.448	6.032	6.446	6.290	6.773
UK	0.0	0.594	0.0	0.559	0.0
Canada	0.720	0.744	0.689	0.711	0.747
Netherlands	0.0	0.748	0.840	0.883	0.0
Norway	0.588	0.706	0.597	0.738	0.651

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-11

SIC CODE NO.: 354 **PRODUCT GROUP:** Petroleum, Coal Products

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.000	1.000	1.000	1.000	1.000
FRG	0.0	0.0	0.0	0.0	0.0
France	0.0	0.0	0.0	0.0	0.0
UK	0.0	0.773	0.0	0.627	0.0
Canada	0.839	0.771	0.812	0.578	0.585
Netherlands	0.0	0.0	0.0	0.0	0.0
Norway	0.0	0.0	0.0	0.0	0.0

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-12

SIC CODE NO.: 355 **PRODUCT GROUP:** Rubber Products

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.000	1.000	1.000	1.000	1.000
FRG	1.137	1.312	1.354	1.421	1.354
France	0.0	0.0	0.0	0.0	0.0
UK	0.0	1.080	0.0	1.244	0.0
Canada	1.277	1.299	1.352	1.260	1.184
Netherlands	0.0	0.0	0.0	0.0	0.0
Norway	0.0	0.0	0.0	0.0	0.0

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-13

SIC CODE NO.: 369 **PRODUCT GROUP:** Non-metal Products

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.000	1.000	1.000	1.000	1.000
FRG	0.467	0.419	0.439	0.530	0.599
France	0.900	0.860	0.885	0.881	0.930
UK	0.0	0.867	0.0	0.996	0.0
Canada	0.882	1.023	1.023	1.014	1.034
Netherlands	0.0	0.0	0.0	0.0	0.0
Norway	0.0	0.0	0.0	0.0	0.0

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-14

SIC CODE NO.: 371 **PRODUCT GROUP:** Iron and Steel

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.000	1.000	1.000	1.000	1.000
FRG	0.986	0.990	1.163	1.321	1.208
France	0.692	0.625	0.667	0.705	0.607
UK	0.0	0.889	0.0	0.950	0.0
Canada	0.792	0.825	0.752	0.804	0.753
Netherlands	6.380	7.165	8.465	10.454	0.0
Norway	0.0	0.0	0.0	0.0	0.0

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-15

SIC CODE NO.: 372 **PRODUCT GROUP:** Non-ferrous Metals

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.0	1.0	1.0	1.0	1.0
FRG	1.5	1.6	1.4	1.7	1.8
France	1.1	1.0	0.9	1.3	1.4
UK	0.0	2.0	0.0	1.9	0.0
Canada	0.7	0.7	0.6	0.7	0.8
Netherlands	0.0	0.0	0.0	0.0	0.0
Norway	0.0	0.0	0.0	0.0	0.0

$^a\dfrac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-16

SIC CODE NO.: 384 **PRODUCT GROUP:** Transport Equipment

UN DATA

	Price Relatives[a]				
	1967	1968	1969	1970	1971
US	1.0000	1.0000	1.0000	1.0000	1.0000
FRG	0.3855	0.3659	0.3550	0.4009	0.4745
France	0.4564	0.4786	0.4136	0.3520	0.4202
UK	0.6	0.5939	0.0	0.6216	0.0
Canada	0.7811	0.7809	0.6992	0.6756	0.7846
Netherlands	0.0	0.0	0.0	0.0	0.0
Norway	0.0	0.0	0.0	0.0	0.0

[a] $\frac{\text{Price of Country x}}{\text{Price of US}}$

Source: *Growth of World Industry*, 1972 edition, United Nations.

Table A-17

Average Tariffs and Effective Rates of Protection (ERP), 1973, for Selected Industrial Sectors

Commodity Class	Industrial Sector	Avg. Tariff	Effective Rate of Protection
Ordnance	Small Arms	8.1	8.6
	Small Arms Ammun.	5.0	5.1
Nondurables	Cheese	10.0	8.5
	Canned Fruits & Vegetables	13.5	17.7
	Wines, Brandy	10.5	8.5
	Distilled Liquor	10.1	6.2
	Cigarettes	25.1	30.7
	Broadwoven Fabrics	18.8	26.1
	Lace Goods	26.3	37.7
	Apparel	24.3	31.1
	Fabricated Text, Nec	14.9	16.5
	Converted Paper	7.6	11.3
	Indust. Chemicals	8.1	8.6
	Chemicals, Nec	10.3	12.8
	Plastics & Resins	11.3	15.0
	Organic Fibers	10.6	12.1
	Drugs	6.2	6.2
	Shoes, Except Rubber	8.8	10.6
Lumber, Wood, Stone, Etc.	Veneer & Plywood	10.8	17.3
	Wood Products, Nec	7.1	9.5
	Glass Products	11.4	12.5
	Ceramic Tile	20.1	25.4
	Vitreous Plumbing	13.2	14.5
	Vitreous China	31.3	36.1
	Non-metallic Minerals	6.5	6.5

Table A-17 (cont'd)

Commodity Class	Industrial Sector	Avg. Tariff	Effective Rate of Protection
Metal Products	Blast Furn. & Steel	6.1	7.0
	Aluminum Rolling	7.2	13.4
	Aluminum Castings	8.2	10.6
	Cutlery	17.2	20.9
	Fab. Metal Products	7.8	9.2
Non-Electric Machinery	Steam Engines	7.2	8.5
	Mach. Cutting Tools	6.9	7.0
	Special Dies & Tools	16.0	18.8
	Textile Machinery	7.1	7.9
	Industrial Furnaces	6.1	6.6
Electric Machinery	Elec. Meas. Instrum.	8.2	8.7
	Elect. Apparatus, Nec	7.0	8.0
	Lighting	12.2	16.0
	Primary Batteries	8.2	9.3
	Elect. Equip., Nec	8.6	10.8
Transport Equipment	Truck Trailers	7.5	8.8
	Ship Building	8.2	9.6
	Rail. & Street Cars	6.8	8.8
	Trailer Coaches	7.2	8.6
	Transport Equip.	8.0	8.6
Instruments, Miscellaneous	Engineering Instruments	6.5	6.0
	Surgical Instrum.	11.6	14.9
	Watches & Clocks	19.0	25.6

Table A-17 (cont'd)

Commodity Class	Industrial Sector	Avg. Tariff	Effective Rate of Protection
Instruments, Miscellaneous (continued)	Jewelry, Prec. Metal	11.5	19.4
	Miscellaneous Products, Nec	9.3	10.6

*See the text discussion of sources and methods of calculations. ERP is calculated by the Corden estimate. See Corden, W. M., "The Calculation of the Cost of Protection," *Econ. Rec.*, April 1957, pp. 29-51. Value-added data for the particular industrial sectors listed are drawn from the 1967 Input-Output table for the United States. For a more complete discussion, see Wolf *et al.*, *op. cit.*